CONTENT ADDRESSABLE MEMORY (CAM) DEVICES WITH BLOCK SELECT AND PIPELINED VIRTUAL SECTOR LOOK-UP CONTROL AND METHODS OF OPERATING SAME

Abstract of the Disclosure

A CAM array block is configured to perform a search operation in a staged segment-to-segment manner using a plurality of hybrid comparands that are pipelined into the CAM array block during consecutive stages of the search operation. These hybrid comparands include at least a virtual sector field and a data field. The CAM array block is also responsive to a segment address, which identifies an active segment of CAM cells in said CAM array block. The CAM array block may include a CAM array and a global mask cell sub-array that is electrically coupled to the CAM array. This global mask cell sub-array may be responsive to the segment address and a mode select signal. A bit/data line control circuit is also provided. The bit/data line control circuit is electrically coupled to the CAM array by bit lines and data lines and has inputs that are responsive to signals generated by the global mask cell sub-array. The device may also include an address translation unit that is responsive to an input address. This address translation unit may be a RAM device that receives a second portion of an input address as a read address. The RAM device may generate at least the virtual sector field and the segment address.

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